23. A heat exchanger comprising:

a plurality of parallel-oriented plates or heat transfer surfaces securely fixed between two outer walls or frames to define between adjacent plates an area of sealed passages for two heat exchanging fluids,

channel or duct means for conducting a hot medium and a cold medium respectively over said plates or heat transfer surfaces such that a flow of hot and cold medium takes place in an in-line and a counter-flow fashion;

an external return bend means providing a transfer of the respective medium from one layer to another layer;

each of said channel means being defined by a pair of said layers disposed one next to the other and by straight or directional baffle means and an internal return bend means located between said adjacent layers,

said internal return bend means having a configuration allowing direct access to said channel means at least at one end without the necessity to dismantle the entire heat exchanger unit;

wherein said outer walls or frames, said heat exchanger is forming a permanently fixed rigid structure to provide a liquid-tight enclosure; and

wherein said external return bend means having a predetermined configuration adapted to provide a greater flow turbulence of the fluid passing through each of said channels, said external return bend means being incorporated into and extending outwardly from said outer walls;

wherein said heat exchanger further comprising two access doors which are removably engaged in an air and liquid tight fashion to allow accessibility simultaneously from two opposite directions without dismantling the entire unit, said doors being of substantially flat configuration;

and wherein said external return bend means are adjacent to said doors.

24. Heat exchanger according to claim 23, wherein said internal return bends having a predetermined configuration adapted to provide a greater flow turbulence of the fluid passing through each of said channels.

25. Heat exchanger according to claim 23, wherein said internal return bend means are permanently fixed between adjacent plates or heat transfer surfaces to provide liquid-tight conditions under high pressure.

26. Heat exchanger according to claim 25, wherein said outer walls or frames, said plates or heat transfer surfaces, said directional baffle means and said internal return bend means are fixed to each other by means of seal-welding.

27. Heat exchanger according to claim 23, wherein said heat exchanger further comprising an inlet pipe means and an outlet pipe means provided for conducting of said hot and cold fluids.

28. Heat exchanger according to claim 27, wherein said inlet and outlet pipe means located adjacent to the outer walls or frames to allow easy removal of said doors.

29. Heat exchanger according to claim 23, wherein said internal return bend means are removably attached between said adjacent plates or heat transfer surfaces to facilitate easy accessibility for

cleaning of said channel means.

30. Heat exchanger according to claim 23, wherein said internal return bend means are permanently fixed at one end of said channel means and are removably attached on the opposite end of said channel means.

31. Heat exchanger according to claim 23, wherein each of said directional baffle means is provided with rounded off ends in order to avoid snagging stringy material contained in said passing fluid.

32. Heat exchanger according to claim 23, wherein said external return bend means having in cross-section a semi- hexagonal configuration.

33. Heat exchanger according to claim 24, wherein said internal return bend means having in cross-section a semi-hexagonal configuration.

34. Heat exchanger according to claim 24, wherein said internal return bend means having in cross-section a semi-octagonal configuration.

35. Heat exchanger according to claim 24, wherein said internal return bend means having in cross-section a semi-circular corrugated-rib configuration.

36. Heat exchanger according to claim 24, wherein said internal return bend means having in cross-section a semi-circular configuration.

37. Heat exchanger according to claim 23, wherein said external return bend means having in cross-section a symmetrical step-like configuration.

38. Heat exchanger according to claim 23, wherein said directional baffle means are provided with a plurality of a pressure relieve recesses formed on said baffle means to allow a quick distribution of pressure in said channel means and to avoid a one-side pressure on said baffle means during blockage of said channel means.

39. Heat exchanger according to claim 23, wherein said internal return bend means are permanently fixed to inner surfaces of said doors to provide easy cleaning of said heat exchanger.

40. Heat exchanger according to claim 27, wherein said heat exchanger further comprising a transition means adapted to connect said inlet and outlet pipe means with said heat exchanger.

41. Heat exchanger according to claim 23, wherein the plurality of said parallel plate means are oriented horizontally.

42. Heat exchanger according to claim 23, wherein the plurality of said parallel plate means are oriented vertically.